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There are sixteen pages of preface with the title-page, and 112 pages of text and one plate; the size of the printed part of the page measures 2.75 inches wide by 5.5 inches high.

Why has this translation been overlooked and who was H. O.?

I am not aware that any writer on the history of geology specifically refers to having seen or read this translation. The copy in the writer's possession is bound up as a separately paged tract at the end of a small volume of the celebrated Robert Boyle's 'Essays of Effluvium,' etc., containing also his 'Essay about the Origine and Virtue of Gems' of 1672. A general title-page gives reference to Steno's work. This title-page is dated 1673. All of the contained tracts appear to have been separately printed at different dates between 1671 and 1673, at which last date they were brought out in the form above described.

The translation appears to have passed out of sight in the same century for John Ray, elected to the Royal Society, 1667, who rewrote his now curious 'Three Physico-Theological Discourses' in 1693, twenty-two years after the H. O. translation appeared, does not mention either the original Prodrumus or this translation of it. Had he known either work probably Ray would not have quoted in his second edition (pages 156-157) Steno's earlier 'Description of a Shark's Head' to the neglect of the most important scientific contribution to the discussion of the origin of fossil shells and geological structures which was extant in his time. It is difficult to account for Ray's reticence unless by reason of his living outside of London. But the publication of the H. O. translation of Steno's 'Prodrumus' as an appendix to Boyle's prolix essays was from the start likely then as now to bury the work out of the sight of any writer on geological subjects.

As for H. O., the translator, he reveals himself in a preface of six pages entitled 'The Interpreter to the Reader' as having recently received a copy of the original Latin work from Italy, as meeting and hearing a declaration from 'the excellent Robert Boyle,' as being familiar with his opinions and writings, and as well with 'Mr. Robert Hook,' his

occupation in the 'rebuilding of the city of London, and his attendance on the R. Society,' from which account it is to be inferred that H. O. also was much about the Royal Society, and his dealings with Boyle who was one of the founders of that institution strengthens this opinion. We know that during these years Henry Oldenburg<sup>1</sup> was secretary of the Royal Society. It is further known that Boyle was in the habit of employing persons to translate works from one language into another at his expense. Oldenburg's initials attached to this translation, his conversation with Boyle concerning the latter's Essay on Gems, of which interview he states that Boyle "before he would see or hear anything of that Prodrumus of Steno, did upon occasion declare to the author of that English version the sum and substance of what is deduced at large [regarding gems] in this tract," and the consociation of Boyle as founder and Oldenburg as first secretary of the Royal Society at this time and of H. O.'s translation with Boyle's 'Essays' make it highly probable that Henry Oldenburg (c. 1626-1678) englished Steno's 'Prodrumus.'

In the interests of a wider acquaintance of many English-speaking students with the path-breakers of modern geology and paleontology the H. O. version of Steno's 'Prodrumus' might deservedly be reprinted.

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#### SOCIETIES AND ACADEMIES

##### THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

THE twentieth meeting of the Society for Experimental Biology and Medicine was held in the Rockefeller Institute for Medical Research, on Wednesday evening, February 20. The president, Simon Flexner, was in the chair.

Members present—Adler, Burton-Opitz, Calkins, Carrel, Conklin, Emerson, Ewing, Field, Flexner, Foster, Gibson, Gies, Lee, Levene, Levin, Mandel (J. A.), Meltzer,

<sup>1</sup>See Encyclopedia Britannica, 9th ed., Vol. 17, page 439, Vol. 22, page 401, and index volume.

Meyer, Murlin, Noguchi, Opie, Salant, Wolf, Yatsu.

Member elected—C. Ward Crampton.

*Abstracts of Original Communications*<sup>1</sup>

*Experimental Studies on Nuclear and Cell Division*: E. G. CONKLIN.

Extensive experiments were made on the segmenting eggs of *Crepidula plana*. These experiments included a study of the influence on nuclear and cell division of hypertonic and hypotonic sea water, of ether, alcohol, etc., of the lack of oxygen, of the electric current, and of pressure and shaking. Many important conclusions were reported and numerous drawings shown.

*Heterotransplantation of Blood Vessels*:

ALEXIS CARREL.

The author's method consisted of removing a segment of the abdominal aorta of a cat, and of reestablishing the circulation in the lower part of the aorta by interposing a segment of the jugular or carotid of a dog and suturing it to the cut ends of the aorta. It was found that a segment of a dog carotid which had been transplanted in a cat could act as artery for seventy-eight days at least.

*Transplantation of the Kidney with Implantation of the Renal Vessels in the Aorta and Vena Cava*: ALEXIS CARREL.

The transplantation of the kidney with implantation of the renal vessels in the aorta and vena cava consists of extirpating from an animal a kidney with its vessels, together with a segment of the aorta and vena cava; also of transplanting the kidney into the abdomen of another animal and suturing the edges of the patches to the edges of suitable openings made in the walls of the aorta and vena cava. The author used this method mainly on cats and obtained excellent results from the standpoint of restoration of the circulation. Of seven animals operated on, six remained in good

condition. The seventh died of intestinal intussusception four days after the operation.

*Secondary Peristalsis of the Esophagus—a Demonstration on a Dog with a Permanent Esophageal Fistula*: S. J. MELTZER.

Injections of indifferent solutions or of air directly into the esophagus cause there a regular peristaltic movement. This latter form of peristaltic movement, which for the sake of brevity the author terms *secondary peristalsis*, differs essentially from *primary peristalsis*, that which follows deglutition, through the nervous mechanism by which it is controlled. The secondary peristalsis requires the presence of some sort of a bolus within the esophagus, and presupposes the integrity of the latter; whereas the primary peristalsis requires neither a bolus nor the integrity of the esophagus. Even if a large section of the latter is removed, the peristalsis appears in the lower segment in due time after each deglutition as long as the vagus nerves remain intact.

The author demonstrated both forms of peristalsis in a dog with a permanent fistula in the upper half of the cervical esophagus.

*Peristaltic Movements of the Rabbit's Cecum and their Inhibition*, with demonstration: S. J. MELTZER and JOHN AUER.

When a well-fed rabbit is fastened on its back on a holder and the hair of the abdomen is removed, as a rule movements of the cecum can be seen sooner or later. The movements are well marked and characteristic in their appearance, and leave no doubt as to the organ in which they take place. As a rule, especially in well-fed rabbits, the movements begin in the colon and travel towards the small gut, that is, they are antiperistaltic in character. But frequently at the end of an antiperistalsis, after only a short interval, the wave returns and runs from the small gut towards the colon; in other words, the antiperistalsis is often followed by a peristaltic wave. The constriction is preceded by a bulging which is more marked than the former. The degree of the constriction (and bulging) is variable. Weaker waves sometimes do not finish the course. A complete course of a wave in one direction lasts from thirty to fifty seconds.

<sup>1</sup> The abstracts presented in this account of the proceedings have been greatly condensed from abstracts prepared by the authors themselves. The latter abstracts of the communications may be found in Number 3 of Volume IV. of the society's proceedings.

The average rate of the movements is about one per minute, but the rhythm is far from being regular. Various influences suppress cecal peristalsis. Ether applied through the nose stops the movements but they return in about a minute after the ether is removed. Pain, struggle and fright stop the movements; but they soon return again. The most striking effect, however, is the one caused by opening the abdomen: the peristaltic movements as a rule disappear completely and permanently.

The authors found that stimulation of the cecum by exposing it to abnormal conditions is capable of inhibiting its movements directly. Laparotomy abolishes the movements of the cecum by direct inhibition, assisted probably also by reflex inhibition. Cecal peristalsis ceases after cutting both vagi. Stimulation of the peripheral end of one vagus causes a tetanic contraction of the entire cecum, especially after destruction of the cord. Some of the above mentioned facts were demonstrated on an animal with destroyed cord.

*Deglutition through an Esophagus Partly Deprived of its Muscularis*, with demonstration: S. J. MELTZER.

The author demonstrated a dog drinking milk in perfectly normal manner against gravity from a bowl on the floor, although a large section of the path of deglutition was deprived of all muscle fibers. The author stated that he had completely removed the muscularis from the entire cervical esophagus of a number of dogs. On the day after the operation they drank milk and water like normal dogs. In these cases there were no muscle fibers for quite a long distance to do the slow work of pushing the liquids into the thoracic esophagus. They were apparently squirted through the cervical esophagus by a muscular force located anteriorly to the esophagus. That this force is not due to the constrictors of the pharynx was demonstrated by another experiment. In one dog, besides the removal of the esophageal muscularis, the middle and lower constrictors of the pharynx were cut and completely put out of function.

This dog, also, drank without any difficulty the day after the operation. The throwing force is apparently exercised by the muscles of the mouth and tongue.

The function of deglutition is provided with a mechanism for a rapid squirting down of appropriate materials. As to which of the mechanisms comes into play in any specific case depends upon the nature of the material which is swallowed.

*Immunity Against Trypanosomes*: F. G. NOVY. (See proceedings of Section K of the American Association for the Advancement of Science, this volume, p. 693.)

*On Secondary Transplantation of a Sarcoma of the Rat*: SIMON FLEXNER and J. W. JOBLING.

The results of this series of experiments<sup>2</sup> show that secondary inoculation succeeds in a high percentage of the rats in which no visible metastases can be seen, and in which visible metastases, in the lungs chiefly, are present. These facts bear upon the view expressed by Sticker, that a primary tumor protects the body from the development of a secondary tumor until the period of metastasis arrives, and upon Ehrlich's negative results in secondary transplantations of a rapidly growing mouse carcinoma. The sarcoma studied by the authors is characterized by its infiltrative growth, but it increases far less rapidly than the most active of Ehrlich's tumors, and reaches, in relation to the size of the rat, no such large size as the latter does in proportion to the size of the mouse.

*On Certain Chemical Complementary Substances*: HIDEYO NOGUCHI.

A comparative study of complement and extract lysins under the same conditions, with numerous important results.

*Effects of Experimental Injuries of the Pancreas*: ISAAC LEVIN.

The author's results lead to the conclusion that the injuries of the pancreas that produce the gravest effect on the organism are those which cause the most serious interference with the circulation of that organ. To pro-

<sup>2</sup>Reference to the previous series was made in SCIENCE, 1906, XXIV., p. 766.

duce a fatal disease it does not suffice to interfere partly with the free secretion of the pancreatic juice into the intestines as in the first series of experiments, or to injure some of the parenchyma and at the same time allow the juice to secrete into the peritoneal cavity, as in the second series. The interference with the circulation must be such as to produce a lesion of the whole organ, so that not only will the organism be deprived of the normal function of the pancreatic cells, as after extirpation of the organ, but also every cell will become diseased and begin to act abnormally and injuriously to the organism.

*The Pathology of Function:* an experimental laboratory course: HAVEN EMERSON.

An outline of experimental procedures comprising a laboratory course at Columbia University, on some common disorders of function and the physiological methods of detecting them.

*The Influence of Alcohol on the Composition of Urine:* F. C. HINKEL and WILLIAM SALANT.

The data obtained by the authors are illustrated by the appended summary of results of a long experiment:

TABLE SHOWING THE INFLUENCE OF ALCOHOL  
(50 C.C. OF 50% OR 70% DAILY) ON THE  
COMPOSITION OF DOG URINE  
*Average Daily Output in Grams*

	Fore period	Alcohol periods		After
	6 days	50% 6 days	70% 7 days	period 10 days
Total nitrogen ..	5.5856	4.9066	5.2846	5.2590
Total sulphur ...	0.3368	0.2553	0.2978	
Neutral sulphur .	0.0917	0.1035	0.1402	
Inorganic sulphur	0.2081	0.1334	0.1442	0.2187
Ethereal sulphur	0.0371	0.0185	0.0133	0.0067
P <sub>2</sub> O <sub>5</sub> . . . . .	0.8016	0.5526	0.5730	0.6959
Chlorides . . . . .	0.3872	0.3000	0.3210	0.3631

*Spirochæta microgyrata* (Löw.) and *Mouse Tumors:* GARY N. CALKINS.

The author described a tumor taken from the right fore leg of a female mouse. A piece of the tumor weighing about 1½ gram was ground up with normal salt solution (3 c.c. of solution per gram of tumor material) and this was injected under the skin of the neck

in twelve white mice. The remainder was fixed in 10-per-cent. formalin and in Zenker's fluid. One tumor has appeared in the inoculated mice. Dr. Ewing described the tumor from sections as an adenoma with glandular characters of the thyroid. Necrotic areas are few in number and very small; mitotic figures are rare.

Sections of the tumor put through the Levaditi silver nitrate method reveal the presence of *Spirochæta microgyrata*. The spirochæte is not widely distributed, but may be found at various points in the tumor mass, especially in the few small vacuolar areas. It has the characters of the species described by Löwenthal in 1905 in a case of human ulcerated carcinoma.

*On the Competency of the Venous Valves and the Venous Flow in Relation to Changes in Intra-abdominal Pressure:* RUSSELL BURTON-OPITZ.

In these experiments on dogs, the author measured blood flow in a femoral vein by means of his new recording stromuhr<sup>3</sup> and suddenly raised intra-abdominal tension either by pressure with the hands upon the external surface of the abdomen, or by inflation of the cavity with air.

In both cases a retardation of the venous inflow was noticed, the degree of the slowing of the blood-stream being in accordance with the increase in the intra-abdominal pressure.

A more abrupt and decisive slowing of the blood stream occurred when pressure was exerted with the hands. It then became possible at times to produce not only a stoppage of the flow, but also a slight backward movement, such as can be accounted for by the stretching of the venous valves.

*On Vaso-motor Nerves in the Pulmonary Circuit:* RUSSELL BURTON-OPITZ.

Various carefully devised experimental procedures failed to reveal vaso-motor influences in the pulmonary circuit.

*The Effect of Salicylic Acid upon Autolysis:* L. B. STOOKEY.

The liver, kidney, spleen and muscle taken from dogs which had received subcutaneously

<sup>3</sup> This volume, p. 422.

doses of sodium salicylate (0.1 gram, in 1-per-cent. solution, per kilo of body weight) daily during a period of ten days, showed rates of autolysis greater than those observed in organs taken from normal dogs.

*On the Synthesis of Protein through the Action of Trypsin:* ALONZO ENGLEBERT TAYLOR.

The author subjected to tryptolysis 400 grams of protamin sulfate obtained from the spermatozoa of the striped bass. The resultant products, freed from sulfate and concentrated to the point of saturation of the solution containing them, were treated with 300 c.c. of a glycerol extract of livers of large soft-shelled California clams, which contain a strong, stable, tryptic enzyme. The mixture was treated with toluol and set aside in a sealed flask. This solution, which was clear at the beginning, gradually became opalescent, then cloudy and finally a white precipitate settled out. This mixture was found to contain a large quantity of protamin. The author presented numerous chemical facts in support of his conclusion that protamin was regenerated in this mixture from its non-protein hydrolytic products.

*A Method for Separating Leucin from Amino-valerianic Acid:* P. A. LEVENE.

Separation of leucin from amino-valerianic acid was accomplished by means of lead acetate and ammonia. A basic lead salt of leucin, insoluble in hot water, was formed. From a mixture containing 52.53 per cent. of C and 9.39 per cent. of H, by the use of these reagents, a substance was obtained which had 54.55 per cent. of C and 9.90 per cent. of H. On reprecipitation it acquired the composition: C = 54.70 per cent.; H = 10.09 per cent. Leucin contains 54.89 per cent. of C and 10.01 per cent. of H.

WILLIAM J. GIES,  
Secretary

THE BIOLOGICAL SOCIETY OF WASHINGTON

THE 427th meeting was held March 9, 1907, with President Stejneger in the chair. The following communications were presented:

J. W. Gidley: 'A New Horned Rodent from

the Miocene of Kansas.' Illustrated with lantern slides.

W. H. Osgood: 'Notes on European Zoological Gardens.'

C. L. Pollard: 'Dictionaries in their Relation to Biology.'

THE 428th meeting was held March 23, 1907, President Stejneger in the chair. Dr. C. W. Stiles read a paper on 'A Reexamination of the Type of *Filaria restiformis*, an Alleged Parasite of Man.' He exhibited the original specimen of *Filaria restiformis*, described by Leidy in 1880. A reexamination of this type has developed the fact that the worm is not a *Filaria*, but a member of the family Mermithidæ. It was certainly not a parasite in the genito-urinary apparatus of man as originally described and, in all probability, was not a parasite of man at all. The original material is in the Army Medical Museum, Washington, D. C. As it can not be determined generically, Dr. Stiles has proposed to place it in the collective group *Agamomermis* as *A. restiformis*. A more detailed account together with drawings of the original specimen will appear later.

Mr. Lyster H. Dewey read a paper on 'The Zapupe Fiber Plant of Eastern Mexico.' Zapupe is a name applied to two species of Agave cultivated in the states of Tamaulipas and Vera Cruz, Mexico, and also to the fibers produced by these plants. Many large plantations comprising a total of more than 4,000,000 zapupe plants have been set out during the past four years. Although these plants have been called Tamaulipas henequen and Huasteca henequen, they are quite distinct from the henequen plants of Yucatan. Both have rigid straight leaves 1 to 2 m. long, but they are narrower, thinner and more numerous than henequen, *Agave rigida elongata* (Jacobi) Baker, or sisal, *A. rigida sisalana* Engelm. Both have small marginal up-curved spines. One, called 'Zapupe verde,' has light green leaves and very sharp terminal spines grooved at the base. The other, called 'Zapupe azul,' has bluish glaucous leaves and terminal spines, usually with an irregularly diamond-shaped

flattened area on the face, but without groove or channel. Zapupe azul, in habit, form of leaf and spines seems to agree perfectly with Tequila azul, *Agave tequilana* Web., cultivated extensively in the region of Tequila, Jalisco, for the production of 'Tequila wine.' The plant is not used for the production of liquor in eastern Mexico. It is said to have been introduced in that region and its origin seems uncertain. Zapupe verde has long been cultivated for fiber by the Indians of Tautoyuca, Vera Cruz. The zapupe fiber morales made by these Indians are among the finest to be found in Mexico. This plant may be *Agave angustifolia* Haw. which has been referred somewhat doubtfully as a synonym of *A. rigida*.

The fibers of both species of zapupe are very similar in character. They belong to the sisal group among the hard fibers used for twines and cordage. They are finer, and more flexible than either Yucatan or Bahama sisal, approaching the better grades of Bahama sisal in general character. In a test for tensile strength they compare favorably with the better grades of sisal.

M. C. MARSH,

Recording Secretary

#### DISCUSSION AND CORRESPONDENCE

##### THE FIRST SPECIES RULE

I HAVE read with a great deal of interest all that has been more recently published in SCIENCE on this topic, because the adoption of and strict adherence to the rule making the 'first species' the generic type will make about as many changes in the nomenclature of the lepidopterous family in which I am especially interested as can well be crowded into it. It will bring up names that have dropped out of use for fifty years and it will completely change the conceptions of a large number of genera that have been in common use for nearly or quite as long a period.

I was particularly interested in the essay by J. A. Allen in the April 5 number of SCIENCE and especially in the following, on p. 548:

Of course, an author often states that certain species are referred to a given genus provisionally, or are given as doubtfully belonging to it. In all such cases the rules of our standard codes prohibit

the taking of any such doubtfully referred species as the type of a genus.

Ordinarily when an author characterizes a genus he has some definite idea that represents his genus—a combination of structures which, taken together, make his generic conception. Whenever there is any change in this association by extension or limitation the genus as first proposed is no longer in existence. As limited or enlarged the association of species represents the conception of the person that limits or extends.

In 1890, in a revision of the species listed under *Agrotis* in our catalogues, I proposed the name *Rhynchagrotis* for an assemblage most prominently characterized by a palpal structure that bore a resemblance to a short snout or beak. There were other characters as well and the combination of those characters made up my genus for which no type was designated.

Among the species referred to this new association was *Agrotis chardynii* (*gilvipennis* Grt.), an oddity in our fauna, standing by itself and differing markedly from all our other forms. It did not really agree with my definition of *Rhynchagrotis* and so I stated; my reason for placing it there being that I believed it would prove to be properly referable to an exotic genus to which I did not care to risk making a synonym.

In accordance with my usual practise in revisional work I prepared a table of species, and for convenience in tabular arrangement I usually separate the oddities first. Thus, *chardynii* being the only one of our species with yellow secondaries was the first to be excluded in the synoptic arrangement, and the list of species described under *Rhynchagrotis* begins with that name.

Recently, Sir George Hampson, in his monumental catalogue of the Phalænæ in the British Museum, treated the Agrotids in his Volume IV., and as his basis for generic combinations did not coincide with mine, there were some shifts. Among others my association under *Rhynchagrotis* was broken up, and of all species in the world *chardynii*, which I felt sure could not remain in it, has now become the 'type,' because it happened to